[COMMITTEE PRINT]

SUMMARY OF FACTS AND MATERIAL

RELATING TO THE

CENTRAL ARIZONA PROJECT

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at the request of
Hon. John R. Murdock, Chairman
Interior and Insular Affairs Committee
House of Representatives

UNITED STATES
GOVERNMENT PRINTING OFFICE
79428 WASHINGTON : 1951

DOCUMENTS EXPEDITING PROJECT

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I. Introduction

The central Arizona project is an integrated plan, which, when fully executed, will provide (1) a supplemental water supply, from certain rivers (particularly the Colorado River), for irrigation and municipal purposes within the State of Arizona; and (2) the generation of hydroelectric power.

This plan is the result of an investigation, begun in 1940, by the Bureau of Reclamation for a determination of the potential development of the water resources of the State of Arizona. After completion of such investigation the Bureau prepared a report entitled "Report on Central Arizona Project" dated December 1947, which was transmitted to the various Federal agencies and to the affected States in accordance with the Flood Control Act of 1944. Subsequently, the Secretary of the Interior approved the report and forwarded it to Congress with the comments of the various States and Federal agencies. In the Eightieth and Eighty-first Congresses bills were introduced, and in the Eighty-second Congress there are now pending bills, to implement the plan for the project as covered by the report. In fact, before the Bureau's report was made, a bill of similar nature was considered in the Seventy-ninth Congress.

The hearings on the various bills have been extensive and have entailed thousands of pages. The matter has become highly controversial. To the interested individual who has not had the opportunity to study this subject and the hearings, it may be helpful to have a summary relative to basic facts and material in order to further follow the developments of the legislation. This summary is, therefore, to provide a background of information for further study and consideration of developments with respect to the matter. All page reference, unless otherwise indicated, used herein, applies to the hearings by the Committee on Public Lands on the bills H. R. 934 and H. R. 935, Eighty-first Congress.

II. Features of the Project

For purpose of a better understanding, it is helpful to view the various features of the project as they may be pointed out, by reference, on the map. There is attached hereto a map of the project area, and with the initial discussion of each feature, reference will be made to a number on such map which will show the location of the particular feature.

Generally, the central Arizona project embraces an area that extends to all boundaries of the State of Arizona, and in one instance goes beyond into the State of New Mexico. (Originally the plan proposed a dam at the Bluff site in Utah. This feature is eliminated

in bills pending in the 82d Cong.) Since, however, the project is primarily an irrigation project, it may be considered as directly affecting some 672,000 acres of farm land in the flood plains and valleys of the Gila River system in central and south central Arizona. The basic principle of the project is the diversion of water from the Colorado River to central Arizona, in order to supplement the present water supply for irrigation in the areas now or heretofore under irrigation. To effectuate this diversion of the Colorado River water and apply it to the lands, certain features or works have become the planks in the platform of the project. It is to these features that attention is now called and which are listed as follows:

1. Bridge Canyon Dam and power plant.
2. Coconino Dam.
3. Havasu pumping plants.
4. Granite Reef aqueduct.
5. McDowell pumping plant and canal.
6. McDowell Dam and power plant.
7. Horseshoe Dam enlargement and power plant.
8. Salt-Gila aqueduct.
9. Charleston Dam.
10. Tucson aqueduct.
11. Buttes Dam and power plant.
12. Safford Valley improvements.
13. Hooker Dam.
14. Irrigation distribution system.
15. Drainage system for salinity control.
16. Power transmission system.

These features will be discussed separately, but before such a discussion, it may be well to state generally the method of diverting the Colorado River water to central Arizona, which is, in fact, the basis of the whole project. This method contemplates that at Lake Havasu behind Parker Dam (map 14) Colorado River water would be lifted 985 feet by a series of proposed pumping plants (map 3) at the extreme western 20 miles of the proposed Granite Reef aqueduct. Such water would then flow through the aqueduct in an easterly direction, some 241 miles to the existing Granite Reef Dam (map 15), where such water would be available for diversion, to be more particularly hereinafter described.

BRIDGE CANYON DAM AND POWER PLANT

(Map 1)

The pumping plants for lifting the water at Lake Havasu, as before mentioned, will require approximately 1.5 billion kilowatt-hours of electric energy annually for such lift. Presently the area is in short supply of electric energy, and there is, therefore, insufficient surplus electric energy for the operation of such pumping plants. The project, therefore, contemplates the construction of a dam at Bridge Canyon at a site 117 miles upstream from Hoover Dam, which will provide a power head sufficient for the generation of an installed capacity of approximately 770,100 kilowatts of power. It is estimated that the pumping plants at Lake Havasu would require one-third of the output of the hydroelectric power generated at the proposed Bridge Canyon power plant. The remainder of such hydroelectric energy would be available for domestic and commercial purposes. Thus, the Bridge Canyon Dam is primarily for the purpose of providing a power head for the generation of hydroelectric energy.

COCONINO DAM

(Map 2)

It is estimated that the silt inflow to the reservoir created by the Bridge Canyon Dam would amount to 127,000 acre-feet per year. It is surmised that unless preventative measures were taken to prevent such silt infiltration, such would infringe on the active storage capacity of the reservoir. In addition, it is believed that the capacity of Bridge Canyon Reservoir would be limited unless upstream river regulation were provided. To provide such river flow regulation and prevent the silting of the Bridge Canyon Reservoir, the plan originally proposed the construction of two upstream reservoirs. One of these was the proposed Bluff Dam on the San Juan River 12 miles downstream from Bluff, Utah. This proposed feature is, however, in the upper basin and has been eliminated from the bills now pending in the Eighty-second Congress.

The other is the proposed Coconino Dam on the Little Colorado River which would be constructed about 49 miles upstream from the mouth of such river. This structure would provide (1) silt retention, (2) flood control, and (3) regulation of stream flow.

HAVASU PUMPING PLANTS

(Map 3)

As before stated, the project contemplates four pumping plants to be located along the extreme western 20 miles of the Granite Reef aqueduct. These pumping plants would raise the Colorado River water of Lake Havasu a total of 985 feet. The power for the operation of such pumps would be provided from the hydroelectric energy generated at Bridge Canyon. As an incident to the latter-mentioned hydroelectric energy, it would be necessary to construct power lines from the Bridge Canyon Dam to the pumping plants. This latter-mentioned feature will be more fully hereafter discussed under such feature.

GRANITE REEF AQUEDUCT

(Map 4)

The Granite Reef aqueduct would be an open concrete-lined canal leading from Lake Havasu to Granite Reef Dam, a distance of approximately 241 miles, and would carry the Colorado River water to central Arizona. The aqueduct would operate at full capacity (1,800 cubic feet per second), except for 1 month of each year when it would be out of operation in order to permit maintenance and repairs to the canal and pumping plants.

M'DOWELL PUMPING PLANT AND CANAL

(Map 5)

During the winter months diversion of the Colorado River water by the aqueduct to the Granite Reef Dam would exceed irrigation demands, and in order to permit continuous operation of the Lake Havasu pumping plants and the aqueduct, such excess water would be

lifted 88 feet by the proposed McDowell pumping plant, and delivered by the McDowell pumping canal to the proposed McDowell reservoir for storage until required.

M'DOWELL DAM AND POWER PLANT

(Map 6)

The McDowell reservoir would be created by the construction of a dam just below the confluence of the Salt and Verde Rivers. In addition to the storage uses, McDowell reservoir would be used to regulate the releases from upstream dams and to provide flood control for downstream developments. A power plant would be installed to utilize the available head at the McDowell reservoir which would serve as a further satisfaction of the need for hydroelectric energy in the area.

HORSESHOE DAM ENLARGEMENT AND POWER PLANT

(Map 7)

The existing Horseshoe Dam on the Verde River would be increased 40 feet in height to provide a normal storage capacity of 298,000 acre feet, thereby increasing its present capacity some 230,000 acre-feet. The proposed power plant at this dam would utilize the power head of the impounded Verde River waters for the generation of hydroelectric energy for use in the area. This proposed enlargement would impound flood waters which cannot now be put to beneficial use. The enlarged capacity would provide an additional average yield from the Verde Reservoir system of 42,000 acre-feet per year.

SALT-GILA AQUEDUCT

(Map 8)

Presently Sahuaro Lake behind Stewart Mountain Dam (map 16) on the Salt River provides irrigation water for the lands below such dam in the vicinity of Phoenix. The water users of such water have vested rights to its use. The project, however, contemplates the diversion of this Sahuaro Lake water to the flood plains of the Middle Gila and Santa Cruz Rivers. Such diversion would be accomplished by the Salt-Gila aqueduct. The water thus diverted to the aqueduct would then be available in the areas before mentioned by its gravity flow through this 74 mile aqueduct which would terminate at the existing Picacaho reservoir (map 17) south of Coolidge. Water from the Colorado River diverted, as before described, would be made available to the present users of the Salt River water, which would, by agreement, be substituted to satisfy their present right to the diverted Salt River water. This procedure would provide the supplemental water needed in the areas served, and in addition, would permit greater diversion by the upstream (Salt River) users, since the downstream areas are satisfied by the agreement of foregoing their claim to Salt River water, and in turn accepting the diverted Colorado River water.

CHARLESTON DAM

(Map 9)

In further pursuance to the exchange of waters as discussed in conjunction with the Salt-Gila aqueduct, the project contemplates the construction of a dam at the Charleston site on the San Pedro River. It is important to note that the vested rights of the downstream users of the San Pedro water will not be infringed upon since they, by agreement, will accept Salt River water diverted, as before described, in place of the San Pedro water which heretofore served their needs. The proposed Charleston Dam would provide (1) flood control to the downstream developments; (2) regulation of the eratic flows of the San Pedro River; (3) aid to diversions of the water to lands now irrigated along the river; and (4) a diversion structure for the Tucson aqueduct. It is estimated that this feature would conserve 7,000 acre-feet of water which otherwise would be lost in the river channel.

THE TUCSON AQUEDUCT

(Map 10)

The Tucson aqueduct, a 70 mile closed conduit from the Charleston Dam to the city of Tucson would provide a supplemental municipal water supply for the city of Tucson, Ariz. In conjunction with the aqueduct, there would be installed a pumping plant to lift the water 300 feet from the reservoir to the aqueduct.

BUTTES DAM AND POWER PLANT

(Map 11)

The proposed Buttes Dam on the Gila River 62 miles below Coolidge Dam, would provide the means of conserving the flood flow of the Gila which enters the river below Coolidge Dam (map 18), thus permitting (1) flood control for protection of downstream developments, (2) silt control, and (3) a power head for the generation of hydroelectric energy for local irrigation pumping and commercial uses. The flood flow impounded by this proposed dam would provide an additional average yield of 64,000 acre-feet annually for use in the middle Gila area.

SAFFORD VALLEY IMPROVEMENTS

(Map 12)

Safford Valley is a presently irrigated area in the upper eastern region of the Gila River in the State of Arizona. This area is in need of additional development. In addition, there are the Duncan-Virden Valley, Red Rock Valley, and Cliff Valley (these areas are in New Mexico, except part of the Duncan-Virden Valley) who likewise need additional developments, particularly in the field of obtaining additional water supplies. The project feature known as Safford Valley improvements would provide (1) consolidation of existing distribution systems, (2) development of ground water supply as a supplement to available surface water, and (3) a permanent diversion

structure at the upper end of Safford Valley to supply a high line canal. The latter mentioned canal would enter along the south side of the valley, and a branch canal would cross the Gila near Safford to serve the north side of the valley.

HOOKER DAM

(Map 13)

Construction of the proposed dam at the Hooker site about 7 miles northeast of Cliff, N. Mex., would serve the areas along the upper reaches of the Gila, and, particularly, the Safford, Cliff, Red Rock, and Duncan-Virden Valleys. This feature would provide (1) partial flood and silt control for downstream water users, and (2) regulation of flood flows. By impounding the flood flow of the Gila at this point, water could be made available to the downstream areas where the river would ordinarily be insufficient to meet irrigation requirements.

IRRIGATION DISTRIBUTION SYSTEM

(General area of project)

Some of the irrigation districts in the areas contemplated as within the Central Arizona project maintain their own distribution systems, while many areas using pump water do not. Many areas irrigated by surface water have inadequate distribution facilities. This feature of the project would provide additions and development of the distribution systems for the delivery of the water to the various irrigation districts.

DRAINAGE SYSTEM FOR SALINITY CONTROL

(General area of project)

Some of the lowlands now or formerly under irrigation in the project area are becoming waterlogged. In addition, lands, through long periods of irrigation, have retained excess salt from the water. To correct these handicaps, the project would provide a drainage system for salinity control. In accomplishing this feature, open drains would be used where possible. Other drainage, as required, would be accomplished by pumping from wells.

POWER TRANSMISSION SYSTEM

(General area of project)

As pointed out earlier in this discussion, a power transmission system would be needed to convey power from the Bridge Canyon power plant to the Havasu pumping plant. Further, there is need of such a transmission system from the various power plants throughout the project to the power market areas. The project would provide such systems. In discussing this feature of the project, Mr. V. E. Larson, assistant regional planning engineer for region III, Bureau of Reclamation, Department of the Interior, stated:

> Under this development it has been assumed that provisions would be made for coordinated and integrated operation of all Government power plants on the lower Colorado River. These plants would be those at Bridge Canyon, Hoover, Davis, and Parker Dams. Coordinated operation would result in the production of greater amounts of firm energy and a more effective utilization of water than if the power plants were operated independently of each other (p. 411).

III. Availability of Water

The central Arizona project contemplates further use of the waters of the Verde, Gila, and San Pedro Rivers heretofore discussed. In addition, the project proposes the diversion of 1,200,000 acre-feet of water from the Colorado River at Lake Havasu, of which amount it is estimated that 123,000 acre-feet would be returned to the river, thereby reflecting a net depletion of the Colorado River water for the project in the amount of 1,077,000 acre-feet. The issue arises as to the availability of such 1.2 million acre-feet (less return flow to the river). The water for such a depletion of the Colorado River must be legally available, otherwise, the plan is untenable. This point has resulted in a serious controversy between the States of Arizona and California. Arizona believes that there is legally available, sufficient water for the required diversion from the Colorado to the project area. California maintains that such water is not legally available, and, therefore, the project is not feasible. To properly understand this matter of the availability of the water, as well as the resulting controversy between the two States, there is necessitated a preliminary discussion of certain statutes and documents that affect the Colorado River and its tributaries, which may be termed the law of the river. An understanding of such statutes and documents is therefore necessary in order to analyze the arguments of each of the States, as well as properly understand the question of the legal availability of the water for the central Arizona project. The important statutes and documents are as follows:

1. Colorado River compact.
2. Boulder Canyon Project Act.
3. California Water Limitation Act.
4. Treaty between United States and Mexico relating to the waters of the Colorado River.
5. Contracts by certain States with Secretary of the Interior with respect to Colorado River water.

COLORADO RIVER COMPACT

In 1921 Congress authorized the States of Arizona, Colorado, California, Nevada, New Mexico, Utah, and Wyoming to negotiate a compact for the diversion of the water of the Colorado River. As a result, the Colorado River compact was signed by the negotiators from each of the States at Santa Fe, N. Mex., November 24, 1922. The compact is the first of the documents making up the law of the river. Generally, the compact provides that the Colorado River Basin, which is defined as the drainage area of the Colorado River system, including the tributaries thereof, shall be divided into the upper and lower basins at a point called Lee Ferry in northern Arizona. The upper basin, by the compact, includes the States of Colorado, Wyoming, and parts of New Mexico, Utah, and Arizona. The lower basin includes the States of California, Nevada, and parts of Arizona, New Mexico, and Utah. For purpose of this discussion, the important article of the compact is article III, which provides as follows:

Article III

(a) There is hereby apportioned from the Colorado River system in perpetuity to the upper basin and to the lower basin, respectively, the exclusive beneficial

consumptive use of 7,500,000 acre-feet of water per annum, which shall include all water necessary for the supply of any rights which may now exist.

(b) In addition to the apportionment in paragraph (a), the lower basin is hereby given the right to increase its beneficial consumptive use of such waters by 1,000,000 acre-feet per annum.

(c) If, as a matter of international comity, the United States of America shall hereafter recognize in the United States of Mexico any right to the use of any waters of the Colorado River system, such waters shall be supplied first from the waters which are surplus over and above the aggregate of the quantities specified in paragraphs (a) and (b); and if such surplus shall prove insufficient for this purpose, then the burden of such deficiency shall be equally borne by the upper basin and the lower basin, and whenever necessary the States of the upper division shall deliver at Lee Ferry water to supply one-half of the deficiency so recognized in addition to that provided in paragraph (d).

(d) The States of the upper division will not cause the flow of the river at Lee Ferry to be depleted below an aggregate of 75,000,000 acre-feet for any period of 10 consecutive years reckoned in continuing progressive series beginning with the 1st day of October next succeeding the ratification of this compact.

(e) The States of the upper division shall not withhold water, and the States of the lower division shall not require the delivery of water, which cannot reasonably be applied to domestic and agricultural uses.

(f) Further equitable apportionment of the beneficial uses of the waters of the Colorado River system unapportioned by paragraphs (a), (b), and (c) may be made in the manner provided in paragraph (g) at any time after October 1, 1963, if and when either basin shall have reached its total beneficial consumptive use as set out in paragraphs (a) and (b).

(g) In the event of a desire for further apportionment as provided in paragraph (f) any two signatory States, acting through their Governors, may give joint notice of such desire to the Governors of the other signatory States and to the President of the United States of America, and it shall be the duty of the Governors of the signatory States and of the President of the United States of America forthwith to appoint representatives, whose duty it shall be to divide and apportion equitably between the upper basin and lower basin the beneficial use of the unapportioned water of the Colorado River system as mentioned in paragraph (f), subject to the legislative ratification of the signatory States and the Congress of the United States of America.

Article XI of the compact provides that the compact shall become binding and obligatory when it shall have been approved by the legislatures of each of the signatory States, and by the Congress of the United States. All of the States ratified this compact after its adoption by the negotiators except Arizona who did not ratify such compact until 1944.

BOULDER CANYON PROJECT ACT

(Act of December 21, 1928, 45 Stat. 1057)

The Boulder Canyon Project Act provided primarily for the construction of what is now called Hoover Dam for the purpose of storing Colorado River water and controlling floods. With respect to the present discussion, section 4 (a) of the act becomes important. Section 4 (a) of the Boulder Canyon Act provides as follows:

SEC. 4. (a) This Act shall not take effect and no authority shall be exercised hereunder and no work shall be begun and no moneys expended on or in connection with the works or structures provided for in this Act, and no water rights shall be claimed or initiated hereunder, and no steps shall be taken by the United States or by others to initiate or perfect any claims to the use of water pertinent to such works or structures unless and until (1) the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming shall have ratified the Colorado River compact, mentioned in section 13 hereof, and the President by public proclamation shall have so declared, or (2) if said States fail to ratify the said compact within six months from the date of the passage of this Act then, until six of said States, including the State of California, shall ratify said compact and shall consent to waive the provisions of the first paragraph of Article XI of said com-

pact, which makes the same binding and obligatory only when approved by each of the seven States signatory thereto, and shall have approved said compact without conditions, save that of such six-State approval, and the President by public proclamation shall have so declared, and, further, until the State of California by act of its legislature, shall agree irrevocably and unconditionally with the United States, and, for the benefit of the States of Arizona, Colorado, Nevada, New Mexico, Utah, and Wyoming, as an express covenant and in consideration of the passage of this Act, that the aggregate annual consumptive use (diversions less returns to the river) of water of and from the Colorado River for use in the State of California, including all uses under contracts made under the provisions of this Act and all water necessary for the supply of any rights which may now exist, shall not exceed four million four hundred thousand acre-feet of the waters apportioned to the lower basin States by paragraph (a) of article III of the Colorado River compact, plus not more than one-half of any excess or surplus waters unapportioned by said compact, such uses always to be subject to the terms of said compact.

The States of Arizona, California, and Nevada are authorized to enter into an agreement which shall provide (1) that of the 7,500,000 acre-feet annually apportioned to the lower basin by paragraph (a) of article III of the Colorado River compact, there shall be apportioned to the State of Nevada 300,000 acre-feet and to the State of Arizona 2,800,000 acre-feet for exclusive beneficial consumptive use in perpetuity, and (2) that the State of Arizona may annually use one-half of the excess or surplus waters unapportioned by the Colorado River compact, and (3) that the State of Arizona shall have the exclusive beneficial consumptive use of the Gila River and its tributaries within the boundaries of said State, and (4) that the waters of the Gila River and its tributaries, except return flow after the same enters the Colorado River, shall never be subject to any diminution whatever by any allowance of water which may be made by treaty or otherwise to the United States of Mexico but if, as provided in paragraph (c) of article III of the Colorado River compact, it shall become necessary to supply water to the United States of Mexico from waters over and above the quantities which are surplus as defined by said compact, then the State of California shall and will mutually agree with the State of Arizona to supply, out of the main stream of the Colorado River, one-half of any deficiency which must be supplied to Mexico by the lower basin, and (5) that the State of California shall and will further mutually agree with the States of Arizona and Nevada, that none of said three States shall withhold water and none shall require the delivery of water, which cannot reasonably be applied to domestic and agricultural uses, and (6) that all of the provisions of said tri-State agreement shall be subject in all particulars to the provisions of the Colorado River compact, and (7) said agreement to take effect upon the ratification of the Colorado River compact by Arizona, California, and Nevada.

The last paragraph of section 4 (a), providing for certain contracts as between the States, was not carried out since the States could not agree upon such contracts.

CALIFORNIA WATER LIMITATION ACT

(Approved by the Governor, March 4, 1929)

This act of the California Legislature was passed pursuant to the provisions of section 4 (a) Boulder Canyon Project Act, since the State of Arizona had not, by act of its legislature, ratified the Colorado River compact. This act limits the use by California of the waters of the Colorado River in that it provides in part as follows:

* * * the State of California * * * agrees irrevocably and unconditionally with the United States, and, for the benefit of the States of Arizona, Colorado, Nevada, New Mexico, Utah, and Wyoming, as an express covenant and in consideration of the passage of the said Boulder Canyon Project Act, that the aggregate annual consumptive use (diversions less returns to the river) of water of and from the Colorado River for use in the State of California, including all uses under contracts made under the provisions of said Boulder Canyon Project Act and all water necessary for the supply of any rights which may now exist, shall not exceed 4,400,000 acre-feet of the waters apportioned to the lower basin States by paragraph (a) of article III of the Colorado River compact, plus not

more than one-half of any excess or surplus waters unapportioned by said contract, such uses always to be subject to the terms of said compact.

TREATY BETWEEN UNITED STATES AND MEXICO RELATING TO THE WATERS OF THE COLORADO RIVER

This treaty provides that 1,500,000 acre-feet of Colorado River water will be delivered annually to Mexico. The treaty was anticipated apparently by the provision made in article III (c) of the Colorado River compact, as this provision of the compact provides for the manner of apportionment, as between the States, of the water for delivery to Mexico.

WATER CONTRACTS WITH THE SECRETARY OF THE INTERIOR FOR COLORADO RIVER WATER

The Boulder Canyon Project Act provided that before construction could be undertaken the Secretary of the Interior must have certain contracts, adequate in his judgment, to provide returns that would repay the investment, plus interest, with respect to certain parts of the investment. Section V of the Boulder Canyon Project Act provided further that no one should have the right to use any of the stored waters except by contract made with the Secretary of the Interior. Under the authority of section V of the act, the Secretary of the Interior entered into certain contracts with five public bodies of California for the storage and delivery of water on various points on the river. In addition, the Secretary entered into a contract with the State of Nevada for the storage and delivery of 300,000 acre-feet of water annually to the State of Nevada. On February 9, 1944, the Secretary entered into a contract with Arizona for the storage and delivery of water to Arizona, subject to the availability thereof and subject to California's rights under the Limitation Act, in the amount of 2,800,000 acre-feet.

BASIN WATERS

It is estimated that the flow of the Colorado River at the international boundary between Mexico and the United States, in virgin flow (natural flow unobstructed by improvements), is 17,720,000 acre-feet. The Colorado River compact, by article III (a), apportions 7,500,000 acre-feet of such water to the upper basin. The compact provides water for the lower basin in the amount of 8,500,000 acre-feet. There is allocated from the Colorado River flow to Mexico, by the Mexican treaty, 1,500,000 acre-feet; thus there accrues a subtotal of apportioned and allocated water from the Colorado in its entirety in the amount of 17,500,000 acre-feet, leaving a total surplus of 220,000 acre-feet to be allocated under the terms of article III (f) of the Colorado River compact.

The documents and statutes heretofore listed which make up the law of the river have been interpreted differently by Arizona and California. Arizona, through its interpretation of the various documents, maintains that there is legally available for Arizona, from the water allocated to the lower basin, a sufficient legal quantity in acre-feet to provide for the central Arizona project, which will require 1,200,000 acre-feet (less 123,000 return flow to the river). California maintains that legally there is not available water for the central

Arizona project. Upon these two positions the issues become joined; and, as one gentleman stated in the hearings, "This controversy is one of a character which, were the States independent sovereigns, would likely lead to war."

PRINCIPAL ISSUES BETWEEN CALIFORNIA AND ARIZONA

There are few grounds for agreement between Arizona and California with respect to the central Arizona project. In regard to the availability of water for the project, the issues fall into three major categories, which are as follows:

(1) Whether by the terms of the California Limitation Act California is entitled to participate in the 1,000,000 acre-feet of water referred to in article III (b) of the Colorado River compact. This issue is one of interpretation of the California Limitation Act and the corresponding language in section 4 (a) of the Boulder Canyon Project Act and the Colorado River compact.

(2) Whether the measure of "beneficial consumptive use" of waters of the Gila River in Arizona is the actual beneficial consumptive use of such waters made in Arizona or is the amount of the depletion by Arizona of the virgin flow of the Colorado River at its confluence with the Gila. This is a question of interpretation of article III of the Colorado River compact.

(3) Whether the 4,400,000 acre-feet of the water apportioned by article III (a) of the Colorado River compact to which California is limited by the Project Act and Limitation Act is a net quantity or is subject to reduction by reason of evaporation and other reservoir losses, particularly at Lake Mead. This is again a question of interpretation of the California Limitation Act and section 4 (a) of the Project Act and the Colorado River compact.

The first issue involving the interpretation of article III (b) of the Colorado River compact, in effect, is the question of whether California is entitled to share in the use of the 1,000,000 acre-feet III (b) water. The question may be amplified by further stating whether III (b) water of the Colorado River compact is "surplus" or "apportioned" within the meaning of section 4 (a) of the Boulder Canyon Project Act.

Reference to the California Limitation Act shows that California has, by such act, limited her use of the waters in the Colorado River to 4,400,000 acre-feet of water apportioned to the lower basin States by paragraph (a) of article III of the Colorado River compact, and that she is entitled to additional water from the Colorado "plus not more than one-half of any excess or surplus waters unapportioned by said compact." The word "unapportioned," as just quoted in the statute, is the basis for California's position that she is entitled to share equally with Arizona in the use of the 1,000,000 acre-feet of water, as provided for in article III (b), since it is her position that only article III (a) water is apportioned by the compact. It is Arizona's contention that article III (a) and (b) waters are apportioned to the lower basin, thereby giving to the lower basin a vested right to the use of 8,500,000 acre-feet, and that California, by the specific terms of her Limitation Act, limits herself from the use of apportioned waters except in the amount of 4,400,000 acre-feet. Further stated, Arizona's position is that the intent of the compact was to apportion article III (b) waters

in addition to the 7,500,000 acre-feet apportioned by article III (a) in order to compensate Arizona for the water used by Arizona from the Gila, which flows almost wholly within that State, and that the State was not named in article III (b) of the compact since the negotiators did not wish to make separate allocations in the compact to the various States. California, on the other hand, takes the position that the Gila waters were included in article III (a) since the compact in article III (a) states that the apportionment "shall include all water necessary for the supply of any rights which may now exist"; that the rights of the Gila were well established and existed at the time of the signing of the compact; and that she is entitled to share, therefore, in such III (b) water. Arizona answers by saying that section 4 (a) of the Project Act limits California to 4,400,000 acre-feet of article III (a) water plus a share of the surplus. It may be readily seen that this difference of opinion is of considerable consequence since California's position would, in effect, entitle her to 4,400,000 acre-feet of water plus one-half article III (b) water, or 500,000 acre-feet.

The second issue likewise involves the interpretation of these documents, particularly in the instance with respect to the amount of water that is chargeable to Arizona for its uses of water of the tributaries of the Colorado River, which tributaries, by the definitions of the compact, are included as in the river system. The Gila River is the primary tributary of the Colorado River flowing through Arizona and is a river of which Arizona has made great use for purposes of irrigation. This issue may be stated in another manner as to whether the flow of the Gila River, for purposes of determining the water supply of the Colorado River Basin, is to be measured at the mouth of the stream or elsewhere. This question brings about two theories with respect to the amount of water that may be chargeable to Arizona through its use of the Gila waters. California adopts and follows a theory with respect to use which may be termed the beneficial consumptive use theory. The effect of this theory is to charge Arizona for all of the water of the Gila River which Arizona uses for beneficial purposes, less the return flow of such water to the Gila River. The Gila River, which flows from east to west through Arizona, is a wasting stream since, after it passes central Arizona, it partially wastes away in desert sands; thus water used by Arizona from the Gila, if not so used, would not all reach the mouth of such river—namely, at its junction with the Colorado—since it would be largely wasted in the desert. California's beneficial consumptive use theory is premised upon charging Arizona with that amount of the Gila water that Arizona uses beneficially and in turn gives her credit for any amounts that may be returned to the Gila after same has been put on the land for irrigation purposes.

Arizona bases her position on a theory which may be termed the depletion theory. This theory provides that Arizona is chargeable

with that amount of water that Arizona depletes the Gila at its mouth. Such theory is premised on the flow of the Gila at its mouth, without any developments upstream, which may be termed as virgin flow. By Arizona's depletion theory she is chargeable with only that used water that depletes the virgin flow of the Gila at its mouth. The difference in these two theories involves approximately 1,000,000 acre-feet of water, as California, under the beneficial consumptive use theory, charges Arizona with 2,300,000 acre-feet of water; Arizona, under the depletion theory, contends she is chargeable with approximately 1,100,000 acre-feet of water.

The third issue involves evaporation from the Colorado River in the lower basin and in turn the evaporation from any storage reservoirs thereon. It is estimated that with full development of the lower basin there will occur a loss of some 900,000 acre-feet of water due to evaporation. It is estimated that, under present conditions with such storage reservoirs as Lake Mead, etc., there is approximately 600,000 acre-feet loss due to evaporation. The question therefore arises as to who shall bear the burden with respect to such evaporation losses as that at Lake Mead. That is, whether the evaporation loss is to be borne by California and Arizona in proportion to the water stored there for each of them, or if the burden of these losses is to be fixed in some other manner. California takes the position that she is not chargeable for any evaporation loss with respect to the 4,400,000 acre-feet of water. This contention is based in part on the boulder Canyon Project Act which provides that California is entitled to divert for the use in California 4,400,000 acre-feet of the water from the Colorado River. Arizona maintains that California should share ratably with the other lower basin States in evaporation losses. Arizona maintains that the 4,400,000 acre-feet for California is allocated while in the Lake Mead Reservoir and therefore the losses are hers rather than Arizona's. This question becomes further complicated with consideration of the construction of Bridge Canyon Dam which will likewise bring about additional evaporation losses.

OTHER COMMITTED WATERS IN LOWER BASIN

Pursuant to the authority given to the Secretary of the Interior in the Boulder Canyon Project Act, the Secretary of the Interior entered into a contract with the State of Nevada whereby Nevada is to receive 300,000 acre-feet as her share of the lower Colorado. It is estimated that new Mexico and Utah are entitled to 130,000 acre-feet. In order to visualize the effects of the positions of California and Arizona with respect to the availability of the water for the central Arizona project, two tables that have been prepared setting forth such views by allocation and uses of the lower Colorado River water. They are as follows:

Availability of Colorado River water for central Arizona project as viewed by Arizona

[Acre-feet of water]

Apportioned water to the lower basin by art. III (a) and (b)		8, 500, 000
Apportioned water to California under Limitations Act	4, 400, 000	
Contract water to Nevada	300, 000	
Estimated lower basin uses by New Mexico and Utah	130, 000	
Arizona's share of the 900,000 acre-feet evaporation	313, 000	
Future depletions by authorized and proposed projects (not including central Arizona project)	927, 000	
Present irrigation depletions of the Colorado river and its tributaries (Gila, etc.) chargeable to Arizona (depletion theory)	1, 408, 000	
Subtotal of water chargeable against the apportioned water to the lower basin		7, 478, 000
		1, 022, 000
Surplus to be allocated to Arizona under art. III (f) of compact		+55, 000
Balance of available water in river		1, 077, 000
Required water for central Arizona project	1, 200, 000	
Less return flow of project to the river	−123, 000	
Actual water for project		1, 077, 000

NOTE.—This table was not taken from the printed hearings but has been developed in an effort to set forth the position of Arizona with respect to the availability of the Colorado River water for central Arizona project.

Availability of Colorado River water for central Arizona project as viewed by California

[Acre-feet of water]

Apportioned water to the lower basin by art. III (a) of compact		7, 500, 000
Apportioned water to California under Limitations Act	4, 400, 000	
Contract water to Nevada	300, 000	
Estimated lower basin uses by New Mexico and Utah	130, 000	
Evaporation losses	600, 000	
Present irrigation uses of the Colorado and its tributaries (Gila, etc.) by Arizona (beneficial consumptive use theory)	2, 300, 000	
Subtotal of water chargeable against the apportioned water to the lower basin		7, 730, 000
		−230, 000
Arizona's share of art. III (b) water		+500, 000
		270, 000
Further depletions by Arizona through authorized and proposed projects (not including central Arizona project)	927, 000	
Central Arizona project	1, 200, 000	
Subtotal of Arizona's authorized and proposed use		2, 127, 000
Total water not available		−1, 857, 000

NOTE.—This table was not taken from the printed hearings but has been developed in an effort to set forth the position of California with respect to the nonavailability of the Colorado River water for central Arizona project.

LEGAL ISSUES

The issues between the States of Arizona and California, as before discussed, have resulted in cases in the Supreme Court of the United States in which the actions were for one reason or another insufficient to bring about a binding determination with respect to the rights of each of the respective States to the Colorado River water. Both States have evidenced a sincere desire to have this matter adjudicated by the Supreme Court of the United States. Here again, however, there is a difference of opinion in that California maintains that it is necessary that the United States be a party to such suits and maintains that the Court has so held, while Arizona contends that no justiciable issue is now involved and maintains that the Court has so held.

In other words, California believes that the issue as between the States may now be determined by the Supreme Court of the United States if Congress permits the United States to be named as a party to such suits. It is California's belief that such was the ground upon which the former cases that went to the Supreme Court were dismissed. Arizona likewise admits the necessity of the United States as a party to any such action but maintains (1) that there is sufficient legally available water for the central Arizona project as well as for other potential projects and (2) that without the passage of the central Arizona project there is no injury or threat of injury of sufficient magnitude to warrant the Court to take jurisdiction. Arizona has repeatedly stated that, unless there is an injury or threat of injury by the taking of the Colorado River water by Arizona, California is not injured and the Supreme Court will act as it has heretofore and dismiss any suit on that ground that no one is now being injured. Arizona's position is that there is now water flowing down the Colorado River that is not being used and that, until someone takes water which would otherwise go for the use of California or other States, there is no injury of sufficient magnitude to create a justiciable issue on which the Supreme Court would take jurisdiction.

California has sponsored various resolutions in Congress asking that the United States be joined as a party in the United States Supreme Court in order to settle the controversy over the Colorado River water as between the States of Arizona and California. Arizona has taken a position against such actions on the ground that without the authorization of a project, such as the central Arizona project, there is no justiciable issue on which the Supreme Court could take jurisdiction. The present bill to implement the central Arizona project now pending in the Senate and the House of Representatives has a proviso whereby any State injured or threatened with injury by the passage of the bill would have 6 months after the effective date of such an act to begin a suit in the Supreme Court of the United States to determine the right to the use of such water, and further provides that no diversion of such Colorado River water would take place until a final adjudication of said suit in the Supreme Court. It is Arizona's position that this section of the bill provides ample safeguards to the rights of California and any other affected State, whereas California maintains that such a suit may now be maintained in the Supreme Court by joinder of the United States without the passage by the Congress of the central Arizona project.

III. Costs of the Central Arizona Project

Regarding the cost of the project, there is again a difference of opinion as between California and Arizona. Arizona supports the position taken by the Department of the Interior with respect to project costs. The 1947 report of the Department of the Interior included certain cost figures which have been used as the basis of the cost of the project by the proponents throughout the various congressional hearings. The construction cost figures submitted by the Department of the Interior are based on 1947 estimates, and for each respective feature of the project are as follows:

Coconino Dam and Reservoir	$7, 487, 000
Bridge Canyon Dam and Reservoir	191, 939, 000
Bridge Canyon power plant	73, 419, 000
Havasu pumping plants	25, 973, 000
Granite Reef aqueduct	131, 716, 000
McDowell pumping plant and canal	3, 346, 000
McDowell Dam and Reservoir	16, 326, 000
McDowell power plant	1, 012, 000
Horseshoe Dam (enlargement) and Reservoir	7, 078, 000
Horseshoe power plant	2, 628, 000
Salt-Gila aqueduct	34, 585, 000
Buttes Dam and Reservoir	29, 037, 000
Buttes power plant	1, 159, 000
Charleston Dam and Reservoir	9, 270, 000
Tucson aqueduct	6, 401, 000
Safford Valley improvements	4, 090, 000
Hooker Dam and Reservoir	15, 484, 000
Irrigation distribution system	54, 086, 000
Drainage system for salinity control	9, 973, 000
Power transmission system	83, 771, 000
Total	708, 780, 000

The plan proposes that all of the construction costs, except nonreimbursables, would be repaid from the sale of irrigation water, municipal water, and hydroelectric energy. The bills now pending provide for repayment of this cost (minus nonreimbursables) within a 75-year period.

Allocations of costs, based on the Department of the Interior report, would be as follows:

Reimbursable:		
Power	$266, 070, 000	
Irrigation	415, 343, 000	
Municipal water supply	17, 871, 000	
Subtotal		$699, 284, 000
Nonreimbursable:		
Flood control	$6, 489, 000	
Fish and wildlife	3, 007, 000	
Subtotal		9, 496, 000
Total		708, 780, 000

The estimated operation, maintenance, and replacement costs, over the 75-year period are as follows:

Reimbursable:		
Power	$267, 195, 000	
Irrigation	232, 777, 000	
Municipal water supply	3, 765, 000	
Total		$503, 737, 000

The estimated project revenues over the 75-year period are as follows:

Power	$939,045,000
Irrigation	238,012,000
Municipal water supply	39,592,000
Total project revenues	$1,216,649,000

During the 75-year repayment period of the project the irrigators would pay approximately $238,012,000 for water (based on a charge of $4.75 per acre-foot). Throughout this same period, the operation, maintenance, and replacement cost for the irrigation features would approximate $232,777,000. The difference between these two figures—$5,235,000—would be paid by the irrigators toward the construction cost allocable to irrigation. The remainder of the construction cost allocated to irrigation would be paid largely through the use of the interest component on commercial power. It may be helpful at this point to temporarily divert attention to a brief discussion of the interest component in order to fully understand its use.

The 1939 Reclamation Act in section 9 (c) provides:

> * * * Any sale of electric power or lease of power privileges, made by the Secretary in connection with the operation of any project or division of a project, shall be for such period, not to exceed forty years, *and at such rates as in his judgment will produce power revenues at least sufficient to cover an appropriate share of the annual operation and maintenance cost, interest on an appropriate share of the construction investment at not less than 3 per centum per annum,* and such other fixed charges as the Secretary deems proper: [Italic inserted.]

In effect, this provision of the Reclamation Act provides that in fixing the commercial power rates the Secretary of the Interior may include 3-percent interest on the investment on power facilities.

This language of the Reclamation Act has been interpreted as providing that the 3-percent interest on power facilities investment may, when paid into the reclamation fund, be used as an aid in satisfying the irrigation construction cost of the particular project wherein such facilities are concerned.

Thus, in the central Arizona project, in fixing the commercial rates for power, an interest rate on the power facilities investment would be charged, which would, when added to the other material rate-making considerations, be sufficient, over the 75-year payment period, to pay (1) power facilities investment, $266,070,000; (2) power facilities operation, maintenance, and replacement, $267,195,000; and (3) partial difference between irrigation construction cost and amount paid thereon by the irrigators, $405,780,000.

The amount of the interest component mentioned in point three is derived as follows:

Power revenues		$939,045,000
Power facilities cost	$266,070,000	
Power facilities operation and maintenance	267,195,000	
Subtotal		533,265,000
Interest component for irrigation		405,780,000

The remainder of the irrigation construction cost would be paid from municipal water revenues (over and above municipal facilities cost) and revenues from the conservancy type districts. Irrigation costs and repayments would therefore balance as follows:

Irrigation features cost	$415, 343, 000
Payment by irrigators	5, 235, 000
Interest component	405, 780, 000
Excess returns from municipal water, etc	4, 328, 000
Total	415, 343, 000

The opponents of the central Arizona project believe generally that the cost estimates of the project are insufficiently grounded, and that the actual cost would greatly exceed the estimates made in the departmental report.

The opponents further object to the cost of the project for the following reasons:

(1) That a large amount of subsidy is involved in the project:

(*a*) That no consideration is given to the amount of interest on the investment;

(*b*) That no actual cost proof of the nonreimbursables is made;

(*c*) That power revenues are necessary to finance the irrigation features.

(2) That no capital charge is made on that part of the project feature which would provide one-third the hydroelectric energy generated at Bridge Canyon for pumping irrigation water.

(*a*) That this one-third power, if sold as commercial power, would produce an additional revenue of $4,500,000 a year; or, in 70 years, $315,000,000.

(3) That the capital cost of the proposed project, as an irrigation enterprise, far exceeds the value of the land to be served or benefited.

(4) That analyses of annual costs and revenues show that the revenues from the sale of water and power would be far from sufficient to repay reimbursable costs and meet other carrying charges under the provisions of the existing reclamation law.

(5) That the project would require water and power rates exceeding the market value, or ability of the water and power users to pay, or a capital subsidy from the United States Treasury in addition to the nonreimbursable cost and the cost interest to the Federal Government on the municipal and irrigation costs.

(6) Irrigators would pay an infinitesimal part, if any, of the construction cost of the project.

IV. Need for the Central Arizona Project

The central Arizona project proposes a supplemental irrigation water supply for some 640,000 of the 672,000 acres of land irrigated at some time prior to 1945 in the State of Arizona. Arizona's position, supported by the Bureau of Reclamation, is that the only source for such supplemental water is the Colorado River and that there is no other source. Without the project, Arizona contends that one-third

of the productive capacity of the State's irrigated area would be lost, and further suggests that such loss would be even greater because continuation of existing circumstances will result in progressively less economical farming. In discussing the result that may be expected without the authorization of the central Arizona project, Mr. Larson, Bureau of Reclamation representative, stated:

> The losses and distress to the individual enterprises during the adjustment period will be tremendous. The correlative interests—the loaning agencies, the local and State governments, and the Nation—will suffer revenue and economic losses. Business houses will lose accounts; some will be forced out of business; mortgages will be foreclosed; farms will be taken over for taxes; and local, county, State, and Federal tax revenues will shrink (pp. 410–411).

The Doane Agricultural Service, Inc., whose report on the central Arizona project was submitted by the proponents of the project at the hearings, states in part as follows:

> The central Arizona project will save a very large investment in farms, irrigation developments, homes, public improvements, utilities, civic and religious developments, and other town and city properties.
>
> The cropland to go out of production unless Colorado River water is made available provides enough food for liberal health diets for 200,000 to 300,000 people, equal to the entire population of a city the size of Syracuse, N. Y.; Dayton, Ohio, or Richmond, Va. (p. 555).

The needs for additional hydroelectric power in the areas to be served by the power-generating plants of the project seem to be unquestioned. The opponents of the project admit the need for the power that would be generated at Bridge Canyon, but object to certain uses to be made thereof; i. e., the irrigation use at Lake Havasu.

The opponents deny the need for the project. In this regard, Raymond Matthew, chief engineer, Colorado River Board of California, stated:

> Studies of the available local water supplies, as compared to the requirements of presently irrigated lands in the main service area of the proposed project, indicate that the additional water supply required is only about one-third to one-fourth the amount estimated to be required by the Bureau of Reclamation; and that a large part, if not all, of the additional water supply required could be obtained by further conservation, distribution, and use of local water supplies, and the maximum efficient utilization of existing ground-water storage capacity, to which insufficient consideration has been given.
>
> Most of the over-all indicated water shortage in the main service area of the proposed project is within newly developed lands irrigated by pumping from ground water and not within the older established irrigation projects of the Salt and Gila River Valleys; and, therefore, the main effect and purpose of the proposed project would apparently be to rescue these newly developed lands which were put under irrigation within recent years in the face of a known shortage of water supply.

The opponents believe that the quantity of water required for the project would produce one of two results: namely, (1) waterlogging of large parts of the area, or (2) great expansion of the irrigated area of Arizona.

Clay C. Elder, hydrographic engineer, Metropolitan Water District of Southern California, testified at the hearings that there is a sufficient underground water supply in central Arizona to supply her present needs. In addition, there are great quantities of water available to Arizona by proper conservation practices, the opponents contend.

V. Feasibility of Project

The Department of the Interior takes the position that, assuming the legal availability of Colorado River water, the project is feasible, both from an economic and engineering point of view. Arizona maintains that there is legally available water, and that the project is feasible in all respects. California denies the feasibility of the project in every respect. Many of the aspects of this controversy have been heretofore touched upon, and no attempt will be made in this summary to go into every detail regarding the broad field of the disagreement.

ARIZONA'S POSITION

The proponents of the central Arizona project believe that the benefits will exceed the cost.

The benefits from the proposed project are divided into two categories, namely: (1) tangible benefits upon which monetary values have been placed, and (2) intangible benefits which cannot be evaluated in monetary terms. The tangible benefits from irrigation are estimated to have an average annual value of $25,268,000. In arriving at this estimate, two general types of tangible irrigation benefits from the project have been evaluated. The first is that composed of benefits accruing directly to farmers, and indirectly to others from the production of a larger volume of agricultural products than would be produced without the project. The second is the benefit accruing directly to the farmer from the reduced pump lift that would result from eliminating the overdraft of ground water. The tangible direct and indirect benefits resulting from the production of additional farm products would average $23,579,000 annually. These benefits are calculated as the increase in the gross value of crops at the farm, based on a price level equivalent to that occurring during the years 1939 and 1944. The benefits and savings from the cost of pumping irrigation waters would average $1,689,000 annually, which represents the difference between the deteriorated conditions that will occur without the project, and the improved conditions that would accompany the furnishing of additional water by the project. The $25,268,000 of annual irrigation benefits is considered as a measure of the net effects of producing, processing, and handling in commercial channels the greater volume of agricultural produce emanating from the project area.

The tangible power benefits resulting from the project based on the computed sales value of the power would be $12,635,000 annually. It is surmised that this is a most conservative estimate.

The tangible municipal water-supply benefits are estimated at $528,000 annually, which amount was derived from the application of a unit sales price of 15 cents per 1,000 gallons to 10,800 acre-feet of water delivered annually to the municipal distribution system of Tucson.

Silt-control benefits are estimated to have an annual value of $1,350,000 during the project repayment period. (This figure included Bluff Dam benefits, which has been eliminated from the pending legislation.)

Recreation benefits have been estimated at $1,482,000 annually.

Fish and wildlife benefits have been estimated at $745,000 annually.

Flood-control benefits are estimated at $316,000 annually.

Salinity control and drainage benefits have been estimated at $256,000 annually.

In appearances before the Committee on Public Lands, representatives of the Department of the Interior stated:

In evaluating annual costs for determining a benefit-cost ratio, all construction costs are assumed to be amortized with interest as a measure of the actual national cost, regardless of the legal aspects of reimbursability or interest-free allocations. Annual amortization costs have been computed on the basis of retiring all project construction costs over a 70-year period at an assumed national interest charge of 2 per cent on the unpaid balance of the debt. This annual charge has been computed to be $19,691,000.

Operation and maintenance costs have been estimated for each of the various features included in the potential project development. The total of these costs would average $4,551,200 annually during the repayment period.

Reserve for replacement is provided in accordance with the estimated requirements for the various features of the project development. It is estimated that payments totaling $2,212,400 annually would be required to provide the necessary reserve.

The relationship between project benefits and costs is outlined in the following table:

Comparison of benefits and costs

Average annual benefits:	
Irrigation	$25, 268, 000
Power	12, 635, 000
Silt control	1, 350, 000
Recreation	1, 482, 000
Municipal water supply	528, 000
Flood control	316, 000
Fish and wildlife conservation	145, 000
Salinity control	256, 000
Total	41, 980, 000
Average annual costs:	
Operation and maintenance	4, 551, 200
Reserve for replacement	2, 212, 400
Amortization of all project construction costs at 2 percent	19, 691, 600
Total	26, 455, 200

Ratio of annual benefits to annual costs equal 1.59 to 1 (p. 416).

The Doane Agricultural Service, Inc., report states:

Based on the cost allocated for repayment by irrigation, the central Arizona project is a sound investment, both for the Government and for the farmers in the project area.

In considering the comparison of benefits and costs, mention should be made of the fact that the allocations to irrigation, power, silt control, recreation, municipal water supply, and salinity control are all reimbursable, and that only those allocations to fish and wildlife conservation and flood control are nonreimbursable.

OPPONENTS' POSITION

California and the opponents of the central Airzona project maintain that the costs of the central Arizona project exceed the benefits. Under the subheading of "Cost of project" a brief discussion was made regarding the opponents' reasons for opposition to the cost of the central Arizona project, and particularly, the allocations of such cost. Such objections may well qualify themselves, both to the cost

and in turn, the financial and economic feasibility of the project. Therefore, the position of the opponents in opposition to the cost may likewise be considered as applicable with respect to feasibility of the project. In addition, the opponents object to the feasibility of the project upon the following grounds:

(1) That there is no legally available Colorado River water for the project.

(2) That costs are speculative and will exceed the cost estimates as well as the benefits.

(3) That the project, as now proposed, fails to provide sufficient silt control for the Bridge Canyon Reservoir.

(4) That the proponents in estimating the direct and indirect benefits of the project, for purpose of showing economic feasibility, use vague guesses rather than actual facts.

(5) That there is no positive proof of the actual benefits as compared to the cost with respect to recreation and fish and wildlife, for purpose of determining feasibility.

(6) That the project is not feasible without a substantial change in the present reclamation law, i. e., with respect to the repayment period.

(7) That the irrigators pay nothing on the capital investment of the project.

(8) That in making a finding of feasibility, the proponents use a power rate chargeable to irrigation that is far less than the market value of the power, which might be used commercially.

(9) That the useful life of the project will not exist until the end of the pay-out period without proper silt control, which necessitates the construction of upstream dams in the upper basin, which is not provided for in the present legislation. (Glen Canyon.)

(10) That the farm prices used in making a finding of a cost-benefit ratio, and the resulting feasibility, are too high for purposes of making a determination with respect to feasibility.

(11) That in determining the irrigation benefits, the use of gross receipts for farm commodities is not, in fact, the proper method of determining the true benefits to irrigation and agriculture; that net agricultural receipts should be used. In this this regard, the opponents cite the report from the Department of Agriculture, submitted in regard to the central Arizona project, dated May 5, 1948, which questions the use of gross rather than net crop values in calculating the true irrigation benefits. Opponents state that the project cannot be made feasible without the use of gross crop values.

(12) That the irrigation benefit of $1,689,000 allocated to the irrigators reduced pump lift is not, in fact, an irrigation benefit, but really a power subsidy.

VI. Bills, S. 75, H. R. 1500 and H. R. 1501

(All identical bills, 82d Cong.)

The bills to implement the central Arizona project now pending in the Eighty-second Congress vary in some respects from the bills considered by the congressional committees in the Eighty-first Congress. The bills pending in the Eighty-second Congress vary slightly

from the bill, S. 75, passed by the Senate in the Eighty-first Congress. A brief summary of the provisions of these bills now pending may be helpful in further understanding the whole matter relating to the central Arizona project.

Section 1, in effect, provides authorization of the 16 features and their use as listed on page 3 of this summary and thereafter described.

Section 2 provides the Secretary of the Interior with the authority to acquire the necessary lands, rights-of-way, etc., for the project by purchase, exchange, or condemnation, and gives certain protection to the vested water rights.

Section 3 provides that the Secretary of the Interior shall determine—

(I) The estimated cost of the project, and in so doing shall determine:

(A) Nonreimbursable allocations to flood control, navigation, fish and wildlife, and any other nonreimbursables hereafter made so by law.

(B) Costs returnable to the United States which shall include:

(1) Estimated irrigation allocation repayable from revenues from the delivery of water for irrigation purposes.

(2) Estimated irrigation allocation repayable from revenues from sources other than the delivery of water for irrigation purposes.

(3) Estimated power allocation repayable from power revenues.

(4) Estimated municipal water allocation repayable from municipal water revenues.

(II) That the costs allocated to power, municipal water supply, irrigation, and other miscellaneous costs will be returned to the United States within a reasonable period, not to exceed 75 years; and that such determination shall be made before any construction work is done or contracted for.

Section 4 provides that irrigation shall have first priority on the electric energy developed by the project facilities, and that the remaining power shall be sold to effectuate the purposes of the act. The Secretary shall be governed by the provisions of the Federal reclamation law that are not inconsistent with the specific provisions of the act.

Section 5 provides for contracts for the delivery of water for irrigation at nondiscriminatory rates at the various points throughout the project area.

Section 6 provides that the works authorized by the act shall be used first for river regulation, improvement of navigation, and flood control; second, for irrigation and domestic uses and the satisfaction of present perfected water rights; and, third, for power. Title to the works shall remain in the United States until otherwise changed by law.

Section 7 provides that the rights of the United States to the waters of the Colorado River and its tributaries with respect to this project shall be subject to and controlled by the Colorado River compact.

Section 8 provides that in constructing, managing, and operating the works of the project, including the operation, delivery, and use of water for the generation of power, irrigation, etc., all users or appro-

priators of such water, shall be controlled by the terms of the Colorado River compact, the water delivery contract between the United States and the State of Arizona, and the laws of the State of Arizona or the State of New Mexico, wherever the same may be applicable.

Section 9 provides recognition of the water delivery treaty between the United States of America and the United States of Mexico.

Section 10 provides that the act shall be deemed a supplement to the Federal reclamation law, except where specifically inconsistent therewith, in which case the act will control.

Section 11 provides protection under State law to the use of waters within the State of Arizona or any other State affected by such project, except as such waters may be specifically affected by the Colorado River compact, or any other interstate agreement.

Section 12 provides that any State who claims injury as a result of the passage of the act, in that such act adversely affects such State's legal right to the water to be appropriated by the project, shall have 6 months within which to begin a suit in the Supreme Court of the United States to determine the right to the use of water for diversion from the mainstream of the Colorado River for use in Arizona.

Section 13 provides for the authorization of appropriations to carry out the provisions of the act, provided, (1) that no money shall be appropriated with respect to the diversion of water from the Colorado River within 6 months after the enactment of the act, or during the pendency of any suit begun pursuant to the provisions of section 12, and (2) that commercial power rates shall be fixed with consideration given to the reservation of the power needed for the operation of the features of the project, that such rate shall be fixed in accordance with Federal reclamation laws, and that the revenues derived from the sale of power shall be credited in accordance with the provisions of the act of May 9, 1938.

Section 14 provides that as an aid to the construction, maintenance, and operation of the works, there is granted to the United States all title and interest in and to Indian trust land, Indian rights-of-way, etc., that may be designated by the Secretary for such project, provided that the Secretary of the Interior shall make every effort, before designating such lands, to negotiate a contract of purchase with such Indians. When such Indian lands are designated for use, without a contract of purchase from the Indians, the Secretary shall determine the just and equitable compensation for same; and, that the Indians, when dissatisfied with such compensation, shall have a right of action against the United States for a determination of the value of the lands and rights-of-way so taken. The funds paid for such lands shall be paid to the tribe or allottee pursuant to certain existing law, but may be used by the Secretary for relocation and/or the acquisition of new lands for the benefit of such Indians. Indian cemeteries may be relocated.

Section 15 provides that none of the works, as provided for in the act, shall be contracted for or begun so long as the material and labor for such project are needed for national defense purposes.

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